Before the
Federal Communications Commission
Washington, DC 20554

In the Matter of	)	
	)	
Inquiry Concerning Deployment of Advanced	)	GN Docket No. 17-199
Telecommunications Capability to All Americans	)	
in a Reasonable and Timely Fashion	)	

To: The Commission

COMMENTS OF
THE BOULDER REGIONAL EMERGENCY TELEPHONE SERVICE AUTHORITY

The Boulder Regional Emergency Telephone Service Authority ("BRETSA"), by its attorney, hereby submits it's Comments on the Commission's August 8, 2017 Thirteenth Section 706 Report Notice of Inquiry in the above-referenced Docket ("NOI").[1]

I. Deployment of Advanced Telecommunications Capability to All Americans Should Not Be At the Expense of Essential Services.

Colorado and Boulder County have vast rural areas where population densities have not supported traditional business models for deployment of broadband services. These areas are typical of sparsely populated areas throughout the United States. Provision of advance telecommunications technologies and capabilities can improve education, health care and employment opportunities in areas previously lacking such capabilities. However, to the extent these capabilities displace existing services without replacing essential capabilities of those services, deployment of advanced telecommunications capabilities can be detrimental. BRETSA is specifically concerned with impacts on reliable 9-1-1 service in areas not protected by diverse network paths.

[1] BRETSA is a Colorado 9-1-1 Authority which establishes, collects and distributes the Colorado Emergency Telephone Surcharge to fund 9-1-1 service in Boulder County, Colorado.

II. Impact of New Telecommunications Capabilities Upon Reliable 9-1-1 Service in Unprotected Areas.

Allenspark, Colorado, an area within Boulder County is similar to many rural, sparsely populated areas of the United States. The incumbent wireline local exchange carrier has a central office in the Allenspark area, supplying exchange (wireline) telephone service in the central office serving area. Due to the limited population in the Allenspark area, declining wireline subscribership, and the expense of placing telecommunications facilities; diversly routed transport facilities have not been placed between Allenspark and the larger public switched telephone network ("PSTN") including the 9-1-1 Selective Router. The LEC in the Allenspark area also provides dedicated transport for (i) broadband traffic between broadband providers' local service facilities and an Internet gateway (and VoIP call routing function); and (ii) wireless traffic between wireless provider cell sites in the Allenspark area and the wireless providers' respective Mobile Switching Centers ("MSCs"). The broadband and wireless traffic is transported along the same call path as wireline calls bound for stations served by other central offices, but is not switched by the Allenspark Central Office.

In fact, there is a single, non-diverse path between the Allenspark Central Office and the Estes Park Central Office serving the Town of Estes Park, Colorado and environs; and there is a single non-diverse path between the Estes Park Central Office and the LEC central office serving Loveland, Colorado. Allenspark has experienced three 9-1-1 outages since September, 2013. In September, 2013, flooding along the Big Thompson River washed away portions of US Highway 34 and Larimer County Road 43 in the Big Thomson Canyon between Estes Park and Loveland, severing fiber optic transmission facilities buried in the right-of-way. This outage prevented wireline 9-1-1 calls from the Allenspark and Estes Park areas from reaching the 9-1-1 Selective Router and lasted over 35 hours. Full restoration of basic emergency service took over 97 hours.

In March 2016, snow brought down aerial fiber providing a temporary connection between Estes Park and Loveland pending rebuilding of US Highway 34 and restoration of fiber in the right-of-way. Restoration of full 9-1-1 service in that instance required over 26 hours. On December 1, 2016, a third-party severed a fiber between Estes Park and Allenspark causing a 9-1-1 outage which lasted approximately 7 hours. Because wireless and VoIP traffic follow this same call path, in each of these instances wireless and VoIP 9-1-1 calls also could not be delivered to the MSC or Internet gateway and VoIP call routing function, and delivered to the SSP's 9-1-1 Selective Router. In other areas of Colorado, 9-1-1 service has been disrupted by individuals shooting bullets into aerial fiber, poles and aerial fiber burning in forest fires, by construction crews cutting through buried fiber (whether direct bury or in conduit), by vermin chewing on buried fiber, and other causes.

As stated, during these outages, wireline 9-1-1 calls could not be routed from the Allenspark area via the Allenspark, Estes Park and Loveland Central Offices to the SSP's redundant and diverse 9-1-1 Selective Routers, and then to the Boulder County PSAP. Wireless calls could not be transmitted from the Allenspark area to the wireless providers' MSCs, where the 9-1-1 calls would first be identified and routed to the SSP's 9-1-1 Selective Routers, and then to the Boulder County PSAP. Broadband traffic could not be transmitted from the Allenspark area to an Internet gateway and VoIP call routing function, where VoIP 9-1-1 calls identified and routed to an Emergency Services Gateway, and then to the 9-1-1 Selective Routers.

For *wireline* 9-1-1 calls, the LEC was able to implement "Condition 4 Call Routing" relatively soon after the outage began. With Condition 4 Call Routing, 9-1-1 calls received at the Allenspark Central Office are re-routed to a local ten-digit number served by the same Central Office. In the case of Allenspark, 9-1-1 calls are routed to a wireline phone at the Allenspark Fire

District Station No. 1 where they are answered by volunteers, until a Boulder County Sheriff's Deputy or dispatcher, reaches the fire station. During Condition 4 Call Routing, the volunteers, Sheriff's deputy or dispatcher taking calls at Fire Station No. 1 answers the calls, and dispatches local First Responders and coordinates with the PSAP over public safety radio channels.

Broadband VoIP and wireless 9-1-1 calls, however, *cannot* be Condition 4 Routed to a local ten-digit number. Wireless and broadband traffic is not switched by the Allenspark Central Office, even if the LEC provides dedicated transport. Wireless 9-1-1 calls are not identified as 9-1-1 calls until they reach the respective provider's MSC. VoIP 9-1-1 calls are not identified as 9-1-1 calls until the broadband traffic reaches the Internet gateway and Internet call routing function. When the single transmission path between the serving area and the MSC or Internet gateway is severed, wireless and VoIP calls including 9-1-1 calls are simply not connected.[2]

There may be cases in which a CLEC, broadband provider, wireless provider, or tower company supplying fiber as a supplementary service, an energy utility, or a state department of transportation has also placed fiber to or through a rural area or community. However it appears these facilities are not generally located or configured so as to provide diverse paths.

In summary, in many rural areas throughout the country, LEC Central Offices are not protected by diverse interoffice facilities; nor are wireless and broadband transmission facilities are not redundant and diverse. While some measure of 9-1-1 service can be restored for wireline customers through Condition 4 Call Routing, wireless and VoIP calls including 9-1-1 calls cannot be connected until the facilities are repaired and service fully restored. As subscribers continue to "cut the cord" and rural populations in some areas continue to decline, the LEC's

[2] In the wake of the 2013 Big Thompson River flood, wireless providers were able to move in "COLTs" and other temporary facilities to restore services lost during the flood; but during the most critical period of this natural disaster their customers were unable to contact anyone over their service. Once the non-diverse transport facilities to the MSC were severed, wireless calls simply went unconnected.

which may also provide wireless and broadband transport may not be in a position to invest in providing new path diversity.

As subscribers continue to "cut the cord" in favor of wireless service, the Commission's Connect America Fund ("CAF") and Connect America Fund II ("CAFII") programs subsidize broadband service in rural areas, and state rural broadband programs also subsidize broadband service in rural areas; there will likely be further migration away from wireline exchange service which can provide Condition 4 Call Routing to restore 9-1-1 service for wireline customers during central office isolation.[3] Decreasing wireline subscribership means that fewer users will have their 9-1-1 calls conditionally re-routed during outages of non-diverse interoffice facilities, and there will be less support for placement of new diverse transport facilities.[4] Nor will transition to NG9-1-1 address this situation, as the first routing point for wireless and VoIP calls is the MSC and Internet Gateway, respectively.

III. Subsidies For Deployment of Advanced Telecommunications Capabilities In Rural Areas Should Include Or Allow Funding For Diverse Paths To MSCs and Internet Gateways.

It appears that when wireless and broadband providers deploy commercial, non-subsidized service to rural areas, they do not fund diverse paths to their MSCs and Internet Gateways. There is no reason to expect them to provide funding for such diverse paths when deploying *subsidized* services to areas lacking a population density to support services on a commercial basis. Diverse paths impose costs without generating revenue.

If *9-1-1 Authorities* are required to fund path diversity, then surcharges, fees or taxes will be diverted from supporting public safety services to subsidizing facilities (significant cost

[3] As BRETSA understands it, deployment of rural broadband facilities results in substitution of broadband service and VoIP calling for wireline exchange service.

[4] BRETSA recognizes that there may be areas where the population served is so small and the cost of diverse paths so large, that placement of diverse facilities may not be economically feasible. In those cases, other technological solutions should be considered.

elements) for *commercial* services; in some cases for providers which count their revenues and even their profits in the $Billions.

Accordingly, BRETSA submits that in this proceeding, the Commission should include in the metrics and benchmarks it assesses the presence of diverse paths between local routers, switches, headends or wireless call aggregation points and MSCs or Internet Gateways. In addition Commission subsidies to support deployment of wireless and broadband service in rural areas should include amounts for deployment of diverse transport facilities to connect (i) unprotected rural wireline central offices to the larger PSTN, (ii) rural broadband services to Internet gateways, and (iii) rural wireless facilities to the appropriate MSC. Finally, the Commission should consider whether wireless and broadband providers should be required to contribute to the costs of path diversity in unprotected areas in which CAF, CAFII and state subsidies are *not* provided.[5]

Respectfully submitted,

BOULDER REGIONAL EMERGENCY TELEPHONE SERVICE AUTHORITY

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[5] Provision for a temporary solution for path diversity to Estes Park and potentially to Allenspark was recently made in Colorado PUC Proceeding No. 16F-0955T. However there are many other rural areas throughout the country with unprotected central offices, and in which the transition to wireless and subsidized broadband service will not include diverse call paths to the MSC or Internet gateway, and will reduce the number and percentage of users whose 9-1-1 calls can be conditionally routed during an outage of a non-diverse call path.